

# Overcoming challenges in TB care: from policy to practice

## Tuberculosis (TB) and Substance Use Disorder (SUD)

Aspects of „behavioural economy“

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МІНІСТЕРСТВО  
ОХОРОНИ  
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Generally:

TB-treatment requires patients to engage in an

**immediate** and **effortful** behaviour

in order to achieve an

**delayed** and **probabilistic** outcome

## „Health Belief Model (HBM)“

A patient's action depends on the perceptions of the benefits and barriers related to health behavior.

### The 6 elements of the HBM

1. “Perceived **susceptibility**” refers to the subjective perception of the risk
2. “Perceived **severity**” refers to the feelings on the seriousness of untreated tuberculosis
3. “Perceived **benefits**” refers to the perceived effectiveness of the TB-treatment
4. “Perceived **barriers**” refers to the feelings on the obstacles to and/or individual costs of receiving TB-treatment (e.g. financial, adverse effects, social consequences, time...).
5. “Cue to action” is the **stimulus** needed to trigger the decision-making process to accept TB treatment (e.g. hemoptysis, acute failure to perform an action, death of a family member, social exclusion, credible information received)
6. “Self-efficacy” refers to the level of a person's confidence in his or her ability to successfully adhere to treatment.

TB-treatment often comes with the „requirement“ of abstinence from substance use in a stage where the patient is not capable or willing to abstain.

High rate of depression/psychiatric disorder, social exclusion, low self esteem etc. diminish the individual value of survival amongst some people living with SUD.

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6. “Self-efficacy” refers to the level of a person's confidence to adhere to treatment.

Often very limited self confidence

Tuberculosis (TB)  
and  
Substance Use Disorder (SUD)

Substance Use Disorder is a disorder of the motivational system of the brain which impairs decision making

**Aspects:**

**Impulsivity**

**Transition from *reflective* to *reflexive* decision making**

**Delay discounting**

# Impulsivity

Impulsivity has long been known as a risk factor for substance use disorder.

Evidence supports the notion that impulsivity both pre-dates and is exacerbated by drug exposure, suggesting their relationship is reciprocal

Hogarth L

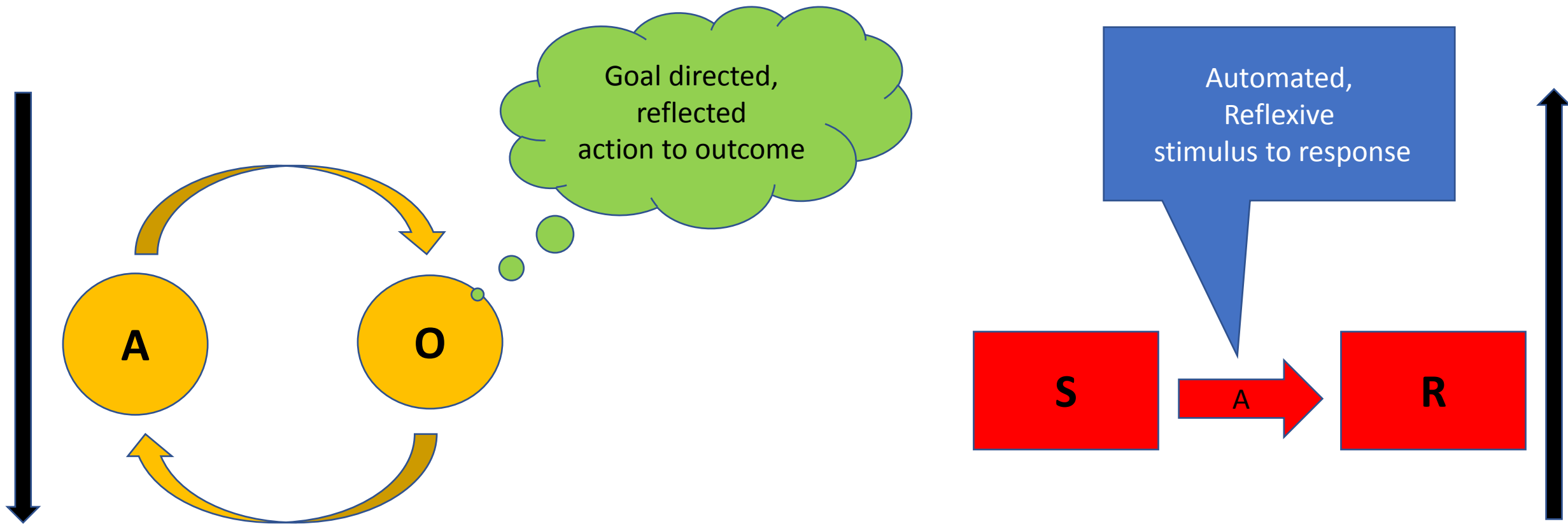
**The role of impulsivity in the aetiology of drug dependence: reward sensitivity versus automaticity**  
Psychopharmacology volume 215, pages567–580(2011)

## Impulsivity

Characteristics of “impulsivity”:

- **lack of forethought before acting**
- **premature acting (negative and positive urgency)**
- **lack of perseverance**
- **sensation seeking and risk-taking behaviour**
- **less affected by anticipated loss**
- **more attuned to quick gains**
- **poor capacity to delay gratification**

Transition from reflective goal-directed behavior to reflexive habitual control over decision making is a hallmark of “addiction”





“Addiction” can be conceptualized as the product of an imbalance between two separate, but interacting, neural systems that control decision making:

1. a reflective, prefrontal cortex system for signaling pain or pleasure of future prospects  
and
2. an impulsive, amygdala system for signaling pain or pleasure of immediate prospects

[Nat Neurosci.](#) 2005 Nov;8(11):1458-63.

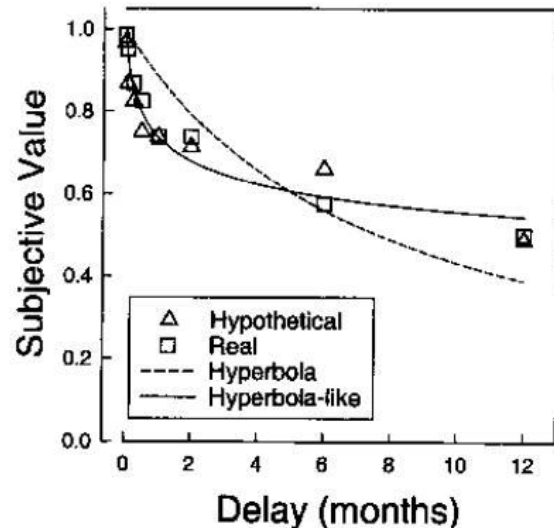
**Decision making, impulse control and loss of willpower to resist drugs: a neurocognitive perspective.**

[Bechara A.](#)

## „Delay discounting“

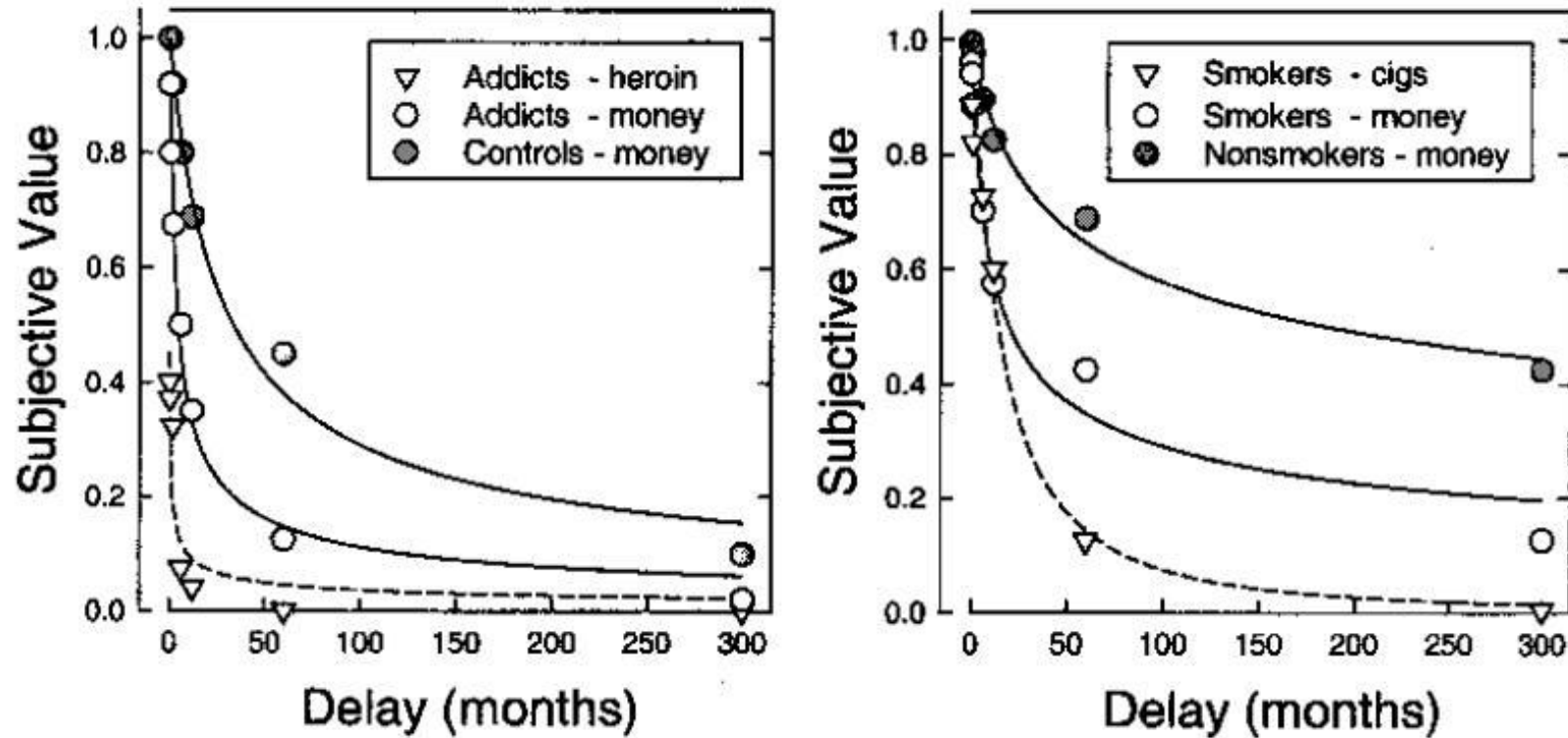
When choosing between delayed or uncertain outcomes, individuals discount the value of such outcomes on the basis of the expected time to or the likelihood of their occurrence.

I.e. a delayed reward is valued less than an immediate reward.



Madden GJ et al  
**Delay discounting of real and hypothetical rewards.**  
Exp Clin Psychopharmacol. 2003 May; 11(2):139-45.

## Delay discounting



Madden GJ et al: **Impulsive and self-control choices in opioid-dependent patients and non-drug-using control participants: drug and monetary rewards.** *Exp Clin Psychopharmacol.* 1997 Aug; 5(3):256-62.

Bickel WK et al: **Impulsivity and Cigarette Smoking: Delay Discounting in Current, Never, and Ex-Smokers,** *Psychopharmacology* (1999), 146, p. 451

Tuberculosis (TB)  
and  
Substance Use Disorder (SUD)

Incentive-based interventions, such as **contingency management (CM)**, are among the most reliable and efficacious means to promote behavior change among people living with SUDs

Numerous trials and meta-analyses demonstrate the efficacy of CM for improving outcomes of patients living with substance use disorder.

Compared to other psychosocial treatments, **CM has the largest effect size**

Petry NM et al:  
**Contingency management treatment for substance use disorders: How far has it come, and where does it need to go?**

Psychol Addict Behav. 2017 Dec; 31(8): 897–906.

## Contingency management among people living with SUD and TB

Three studies examined CM to promote adherence to isoniazid therapy for TB. Patients (living with SUD) were offered incentives for taking each dose of isoniazid.

Patients offered incentives had superior treatment outcomes in all three studies.

For adherence to TB treatment there is NO evidence collected yet – in contrast to consistently positive evidence on substance use as well as on ART-adherence.

Herrmann ES et al.

**Contingency Management Interventions for HIV, Tuberculosis, and Hepatitis Control Among Individuals With Substance Use Disorders: A Systematized Review.**

J Subst Abuse Treat. 2017 January ; 72: 117–125

## Possible consequences?

- Based on the Health Belief Model in the notion the people living with substance use disorder might perceive requested abstinence as an unsurmountable barrier to treatment we should carefully assess feasibility of accepting approaches, including classical harm reduction, OST and controlled use strategies during TB-Tx
- Based on the concepts of impulsivity and SUD being a disorder or motivational processing, we need to consider individually tailored contingency management plans for people who use drugs and research this approach.
- Based on the evidence of steeper delay discounting, we need to enroll people living with SUD even more urgently into shorter-treatment-trials than the population not affected by substance use disorder. The effect-size of shortening the treatment is expected to be bigger among people who use drugs.